Director of
Central
Intelligence

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Soviet Capabilities for Strategic Nuclear Conflict Through the Late 1980s

National Intelligence Estimate
Volume I—The Estimate

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The Director of Central Intelligence

Washington, D.C. 20505

7 March 1979

MEMORANDUM FOR: Recipients of NIE 11-3/8-78, Soviet Capabilities for Strategic Nuclear Conflict through the Late 1980s

SUBJECT: Transmittal of Volume I, The Estimate

1. Transmitted herewith is the Executive Summary and main text of the annual National Intelligence Estimate on Soviet capabilities for strategic nuclear conflict. It was approved on 16 January 1979 with the concurrence of the National Foreign Intelligence Board as indicated. A more detailed volume of supporting and additional analysis will be disseminated when available.

2. Like previous estimates in this series, this NIE calls attention to the broad scope, vigor and persistence of Soviet strategic offensive and defensive programs. It summarizes and evaluates these programs within the limits of our knowledge and uncertainties about them. It notes that evidence acquired during the past year indicates that some near-term Soviet advances will be greater than previously anticipated.

3. The projections of future Soviet forces contained in the NIE are intended to illustrate trends foreseeable on the basis of evidence and analysis as of 1 January 1979. Recipients are reminded that the Soviet programs are dynamic and that our projections are subject to change as additional evidence is acquired.

4. In order to provide perspective on the implications of the foreseeable trends in Soviet forces, certain comparisons with projected US forces are made herein. These projections illustrate US programs and some US options as of the 1 January cutoff date, and are also subject to change. In fact, the US weapon and force levels shown in this NIE are currently under review.

5. Finally, recipients of this NIE are cautioned that much of our information about Soviet strategic programs is from extremely sensitive intelligence sources and methods which would be placed in jeopardy by unauthorized disclosure of its contents.

STANSFIELD TURNER

NIE 11-3/8-78

SOVIET CAPABILITIES FOR STRATEGIC NUCLEAR CONFLICT THROUGH THE LATE 1980s

Volume I—The Estimate

THIS ESTIMATE IS ISSUED BY THE DIRECTOR OF CENTRAL INTELLIGENCE.

THE NATIONAL FOREIGN INTELLIGENCE BOARD CONCURS, EXCEPT AS NOTED IN THE TEXT.

The following intelligence organizations participated in the preparation of the Estimate:

The Central Intelligence Agency, the intelligence organizations of the Departments of State, Energy, and Defense, and the National Security Agency

Also Participating:

The Assistant Chief of Staff for Intelligence, Department of the Army

The Director of Naval Intelligence, Department of the Navy

The Assistant Chief of Staff, Intelligence, Department of the Air Force

SCOPE NOTE

This National Intelligence Estimate assesses present and future Soviet capabilities for strategic nuclear conflict. It estimates the numbers, types, and characteristics of Soviet offensive and defensive forces for strategic nuclear conflict over the next 10 years. It examines the USSR's capabilities to integrate and operate its forces in peace and war. It summarizes Soviet policies and doctrine applicable to strategic nuclear forces.

The Estimate treats the following elements of Soviet military forces:

- **Intercontinental attack:** intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), intercontinental bombers, and long-range cruise missiles.
- **Peripheral attack:** intermediate-range bombers, medium- and intermediate-range ballistic missiles (MRBMs and IRBMs), and certain older SLBMs.
- **Strategic defense:** ballistic missile early warning systems, antiballistic missile (ABM) and antisatellite (ASAT) systems; surface-to-air missiles (SAMs), fighter interceptors, and supporting systems for defending Soviet territory against aircraft and cruise missiles; systems with antisubmarine warfare (ASW) capabilities for use against nuclear-powered ballistic missile submarines (SSBNs); and the Soviet civil defense program.
- **Operational considerations:** activities, organizations, and operational factors which support and integrate Soviet strategic nuclear forces. Notable among these are the Soviet command, control, and communications system; the readiness procedures and alert status of forces; [redacted]
- **Research and development:** R&D programs and methods of developing and procuring strategic forces.

Important aspects of Soviet policies with respect to strategic forces, as well as other military programs and capabilities, are addressed in three other National Intelligence Estimates: NIE 11-4, *Soviet Goals and Expectations in the Global Power Arena*, addresses the broad national and foreign policy expectations of the USSR, including strategic policy and goals; NIE 11-14, *Warsaw Pact Forces Opposite NATO*, addresses Soviet forces and capabilities for theater warfare; and NIE 11-10, *Soviet*

Military Capabilities To Project Power and Influence in Distant Areas, addresses Soviet opportunism in Third World areas. In addition, a more thorough presentation of issues pertaining to peripheral attack forces is given in NIE 11-6, *Soviet Strategic Forces for Peripheral Attack*.

To meet the needs of a variety of consumers, the Estimate consists of two volumes. The first volume contains an executive summary and our broad estimates of: Soviet policies underlying strategic force programs; the main developments and trends in Soviet strategic offensive and defensive programs; the control and employment of Soviet strategic forces; and the implications of future Soviet strategic forces. The second volume contains more detailed supporting and additional analysis of Soviet strategic offensive and defensive forces and programs, along with relevant aspects of Soviet doctrine, policy, and operational concepts. The second volume also includes an annex which details our projections of future Soviet strategic offensive and defensive forces through 1988. The cutoff date for information and analysis in this Estimate is 1 January 1979.

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EXECUTIVE SUMMARY

Key Recent Developments

1. In recent years, estimates in this series have called attention to the broad scope, vigor, and persistence of Soviet strategic offensive and defensive programs, the increased Soviet emphasis on technological improvement, and the continued Soviet concentration on counterforce and damage-limiting capabilities.

— Last year we forecast that during at least the coming few years the general picture would be one of continued Soviet advance on a broad front, while the US effort remained more limited. We called attention to the likelihood that prospective developments would convey a perception of Soviet momentum and of trends unfavorable to the United States and its allies.

— The evidence this year strengthens these judgments. It indicates that some near-term Soviet advances will be greater than we had foreseen.

2. During the year, the USSR has continued its steady modernization of both intercontinental and intermediate-range offensive forces and has made additional progress in research and development to create more capable offensive and defensive systems. The most important recent developments, and their effects on our estimates about the USSR's prospects and policies, are as follows:

— The Soviets are flight-testing modified ICBMs with MIRVs (multiple independently targetable reentry vehicles) that are considerably more accurate than currently deployed versions. Extensive and successful testing this year indicates that these modified systems probably will start to be deployed in 1979.

We had expected such accuracy improvements, but not until the advent of new ICBMs several years later. We now estimate that the Soviet ICBM force will achieve the potential capability to destroy some four-fifths of the US Minuteman silos in 1980-81, three to four years earlier than projected in last year's estimate.

— In their testing programs for both ICBMs and SLBMs, the Soviets have continued to stress MIRVed systems, two of which carry more RVs (reentry vehicles) than the initially deployed versions. In deployment programs, the Soviets have evidently decided to install MIRVed missiles in virtually all of their MIRV-capable ICBM and SLBM launchers. Thus, the number of missile RVs in the USSR's intercontinental striking forces will probably increase considerably more rapidly in the next few years than we had expected. At the same time, the United States now anticipates some slippages in its own new programs. We now estimate that for a few years in the early-to-mid-1980s, the USSR is likely to match or slightly surpass the United States in total online intercontinental offensive weapons—that is, in online ICBM and SLBM reentry vehicles and bomber weapons combined.

— In air defense research and development, the Soviets this year demonstrated low-altitude intercept capabilities in a new lookdown/shootdown fighter under test conditions. They made further progress in their R&D on an AWACS (airborne warning and control system) and a new low-altitude SAM system. These developments, along with the great importance the Soviets assign to the damage-limiting aspects of their strategic capabilities, lead us to believe that in the 1980s the Soviets will place increasing emphasis on improving their defenses, especially against bombers and cruise missiles at low altitudes.

— The Soviets have now achieved initial operational deployments of MIRVed mobile IRBMs as part of an extensive program to modernize their strategic capabilities against European NATO, China, and other areas on the Eurasian periphery. Soviet strategic forces for peripheral attack are already superior in striking power to those of the comparable Western and Chinese forces combined. The modernization of these Soviet forces will increase the existing disparity.

[ ] the Soviets have continued to emphasize the launch of their strategic missiles upon receipt of tactical warning from early warning radars and other detection systems that an enemy strike was en route. Along with continuing improvements in warning sensors, in force reaction times, and in the flexibility and survivability of forces and command and control systems [ ] the USSR can now employ its strategic forces for preemptive, retaliatory, or launch-on-tactical-warning strikes, in addition to the much less likely option of surprise attack. While we do not fully understand the significance for Soviet strategy [ ] could reflect: concern that the USSR might not obtain advance warning of a US decision to strike; recognition that any decision to preempt would risk initiating a nuclear exchange by mistake; growing confidence that Soviet forces could respond in time or even suffer some losses and still be able to counterattack against a wide range of US targets; and hope that Soviet power now deters the United States sufficiently to lessen the chances that the United States would escalate from theater to intercontinental war. At a minimum, launch-on-warning capabilities and tactics increase the options available to the Soviet leadership under circumstances of crisis and conflict which could vary widely.

3. Other noteworthy developments of the past year show that Soviet strategic programs have neither narrowed in scope nor slackened in pace. These programs continue to reflect the Soviet conviction that enhancement of the USSR's strategic posture requires concentration on supporting capabilities, such as command and control, as well as on forces and weapons:

— In strategic offensive forces, research and development activity is in progress on improved weapons in all categories. Systems under development include several new or modified ICBMs, a new IRBM, a new large ballistic missile submarine and SLBM weapon system, what is probably a long-range ALCM (air-launched cruise missile), and possibly a new intercontinental bomber or cruise missile carrier or both.

— In ASW programs, there were initial sea trials this year of a new class of SSN (nuclear-powered attack submarine) which can dive deeper and may be somewhat quieter than its

predecessors. There is evidence that the Soviet SSN force will expand in the future. The Soviets have continued their efforts to develop more effective ASW sensors, though they continue to lack broad ocean detection capabilities.

— In ABM defense, R&D in both systems and technology continues. The limited ABM capability at Moscow remains operational without change.

— In command, control, and communications, the Soviets have long stressed redundancy and extensive bunkering in an effort to ensure continuity of command and the availability of information in wartime. In addition, they are augmenting their fixed facilities with various kinds of mobile command posts for national and military authorities. The command and control system appears capable of supporting essential decisions and transmitting initial launch instructions to Soviet strategic forces even if directly attacked. It also appears to have good capabilities for sustained battle management, but these capabilities would be severely degraded if key national-level command bunkers and communications centers were destroyed.

—[

] We estimate that present Soviet antisatellite systems are capable of being employed against US satellites at low and medium altitudes, although the latter capability has not yet been demonstrated. In the 1980s the Soviets could have systems able to destroy or degrade satellites at higher altitudes, including those in geosynchronous orbits.

Implications of Trends in Soviet Intercontinental Offensive Forces

4. Judging by developments under way or foreseeable in the near term, the early-to-mid-1980s will be a period in which Soviet intercontinental offensive capabilities are further improved relative to those of the West. Substantial increases in our estimates of Soviet countersilo capabilities and MIRV deployments over the next few years, combined with some slippages in US programs, lead us to believe that this period will arrive sooner and last longer than previously anticipated. Beginning around the mid-1980s, if Soviet

programs proceed in accordance with our best estimates and US programs go forward without further slippages, US weapon systems becoming operational are likely to bring a new rise in US intercontinental offensive power along with continuing Soviet advances.

5. To assist in interpreting the implications of Soviet intercontinental offensive forces over the next 10 years, we compare them in the accompanying charts with projected US forces. The primary purpose of these comparisons is to display in graphic form some of the factors which may affect: the viability and stability of the US deterrent; the USSR's evaluation of its comparative intercontinental offensive capabilities and vulnerabilities; and perceptions of relative power in the United States, the USSR, and elsewhere.

— The future Soviet forces are intelligence projections, whereas the future US forces are based on Department of Defense projections. The projections assume adherence by both sides, through 1988, to the provisions of an agreement along the lines now being negotiated at the strategic arms limitation talks (SALT). The projections of Soviet forces represent our best estimates of Soviet deployments and technological progress under a SALT II agreement.

— The forces compared consist of ICBM launchers and their missiles, SLBM launchers and their missiles, and heavy bombers carrying bombs, SRAMs (short-range attack missiles), or ALCMs. The comparison of delivery vehicles includes all SALT-accountable systems except for about 200 B-52 aircraft that are in storage and not operational. Systems off line for overhaul or conversion are included in the number of delivery vehicles but are excluded from the comparisons of numbers of weapons and equivalent megatons.

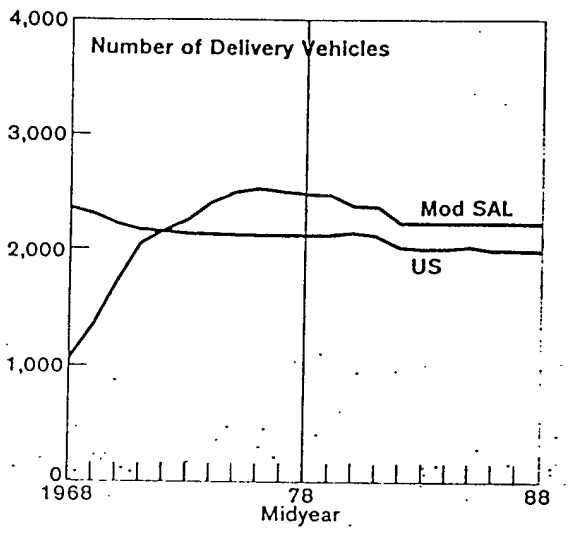
— The comparisons also exclude a number of options each side could exercise to alter the striking power or survivability of its intercontinental forces. Options not illustrated on the US side, for example, include the deployment of ICBMs in a mobile basing configuration and the introduction of the M-X ICBM or a system with comparable capabilities.[1]

[1] In the body of the Estimate, a variety of alternatives and options are included and the sensitivity of comparisons to these and other variables is examined. Among other things, the Estimate examines the effects of adding Backfire and FB-111 aircraft, representative non-SALT projections for each side, more pessimistic assumptions about Soviet technological progress, the effects of new deployment modes for US ICBMs, and the deployment of a system such as M-X.

Indexes of Soviet and US Forces for Intercontinental Attack, 1968–88

Chart 1

Soviet Mod SAL Force; US SALT-Limited Force



The figures for total delivery vehicles include ICBM launchers operational, in conversion, or under construction; SLBM launchers operational, under conversion, in shipyard overhaul, or on sea trials; and operational long-range bombers. The figures do not include SLBM launchers on SSBNs which have not yet begun sea trials or land-mobile ICBM launchers produced but not in units. Also excluded from the Soviet figures are Backfire aircraft, ICBM launchers believed to be operational at Tyuratam, Bear aircraft in naval aviation and reconnaissance units, Bison tankers, and the launchers aboard G-class submarines. FB-111s and mothballed B-52s are not included in US totals.

The figures for the online measures exclude ICBM silo launchers under construction or conversion and SLBM launchers on SSBNs undergoing sea trials, conversion, or shipyard overhaul.

Missile payloads composed of MRVs (which are not independently targetable) are counted as one RV.

6. Chart 1 shows how Soviet and US intercontinental offensive forces compared in the past 10 years and are projected to compare in the coming 10 years, using four indexes of quantity and quality to illustrate the trends.

— The graphs show that, over the past decade, the Soviets have moved from a position of inferiority in each of these indexes to a present position in which they lead in delivery vehicles and online equivalent megatons, but are still inferior in total numbers of online weapons and average accuracy of MIRVed ICBMs.

— With respect to the future, the upper left-hand graph shows that SALT II would require a reduction in Soviet delivery vehicles and bring about a more nearly equal situation in this index.

— The lower left-hand graph shows that the substantial Soviet lead in online equivalent megatons will increase as the USSR continues to deploy weapons with relatively large yields.

— The lower right-hand graph illustrates the effects of the anticipated Soviet deployment of MIRVed ICBMs with improved accuracies. (The accuracies of individual Soviet ICBM systems are shown in figure 2 of part B.) The current US defense program does not include further accuracy improvements for present types of ICBMs.

— The upper right-hand graph, comparing total online weapons in intercontinental forces, shows how Soviet MIRV deployments, which began about five years later than those of the United States, are substantially increasing total Soviet weapons for intercontinental attack. In this index, the United States remains about at its current level until Trident and especially ALCM programs are under way. This Estimate is the first in which we have forecast even temporary Soviet equality in this index at any time during the ensuing 10 years under a SALT II agreement.

— The upper right-hand graph also shows that, in the middle and late 1980s, both sides are likely to advance in total numbers of online weapons in intercontinental forces. In the mid-1980s and after, the US advance is likely to be somewhat faster than that of the USSR because of the programed large-scale US deployment of ALCMs.

7. Chart 2 combines numbers of online weapons and the yields, accuracies, and reliabilities of weapons and their delivery vehicles into simplified measures of the total theoretical destructive potential of intercontinental striking forces. For purposes of measurement and comparison, we assume in each case that every online weapon in the intercontinental forces of both sides is to be used for one or the other of two generic applications: lethal area potential assumes exclusive use of all weapons to destroy soft area targets; hard-target potential assumes exclusive use to destroy hard point targets. For a common base of comparison, the damage criterion for soft targets is set at a level sufficient to destroy a reinforced concrete building, while for hard targets it is set at a level sufficient to destroy a representative hard missile silo.

— It should be noted that the graphs in chart 2 display rough measures of prelaunch potential against notional targets of purely nominal hardness. They do not reflect real-world economic or military target sets, targeting plans, or operational attributes of weapon systems which would affect their utility in intercontinental warfare.

— The left-hand graph shows that the USSR's program to deploy MIRV warheads of relatively high yield will cause its lead in lethal area potential to increase. The absolute potentials of both sides are very large, however. Even at the stringent damage criterion chosen, the total US lethal area potential today is

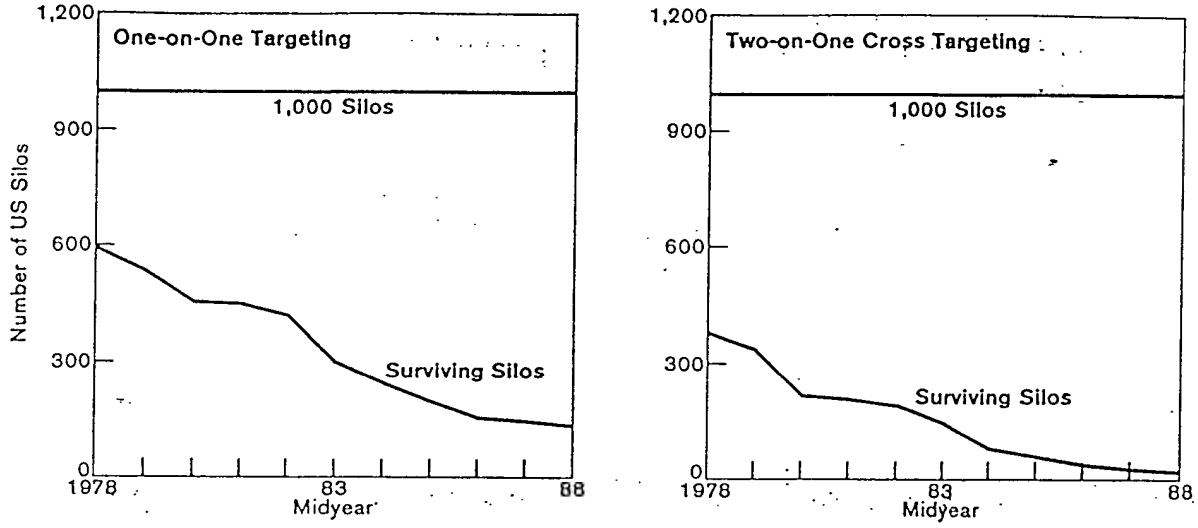
[ ]

— The right-hand graph shows that the USSR's program to deploy MIRVed ICBMs with improved accuracies and relatively high yield warheads will cause Soviet hard-target potential to match and slightly surpass that of the United States beginning in about 1980. At that time each side will have the theoretical potential to destroy [ ] hard targets. These theoretical potentials will more than double by 1988. During this period, there will be many more hardened targets in the USSR than in the United States: in the USSR, some 1,400 to 1,600 hard ICBM silos and launch control centers plus hundreds of bunkers of varying lesser hardnesses; in the United States, some 1,100 to 1,200 hard silos and launch control centers but only a small number of other hardened facilities. It should be noted that most of the Soviet capability is in ICBMs with flight times of about 30 minutes, whereas a large portion of the US capability is in weapons carried by bombers with flight times on the order of 10 hours.

Countersilo Capabilities of Soviet ICBMs, 1978–88

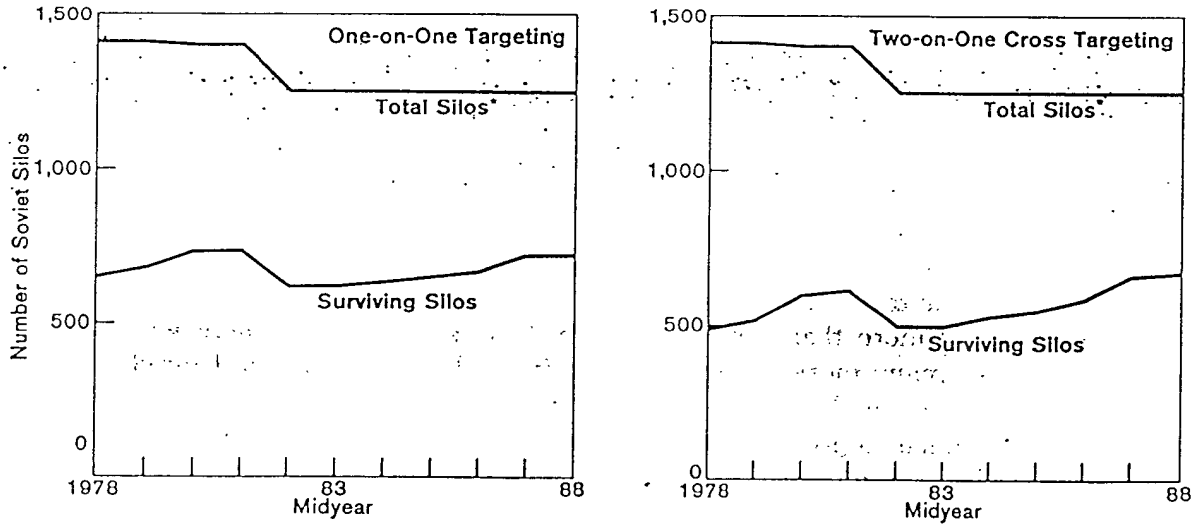
Chart 3

Hypothetical Attack by ICBMs of Soviet Mod SAL Force
Against 1,000 Minuteman Silos



Prelaunch Vulnerability of Soviet ICBMs, 1978–88

Hypothetical Attack by ICBMs of US SALT-Limited Force
Against Soviet Mod SAL Force



*The decrease in total Soviet silos in the early 1980s reflects our assumption that the Soviets will dismantle some silos, along with other systems, to comply with SALT II aggregate limitations.

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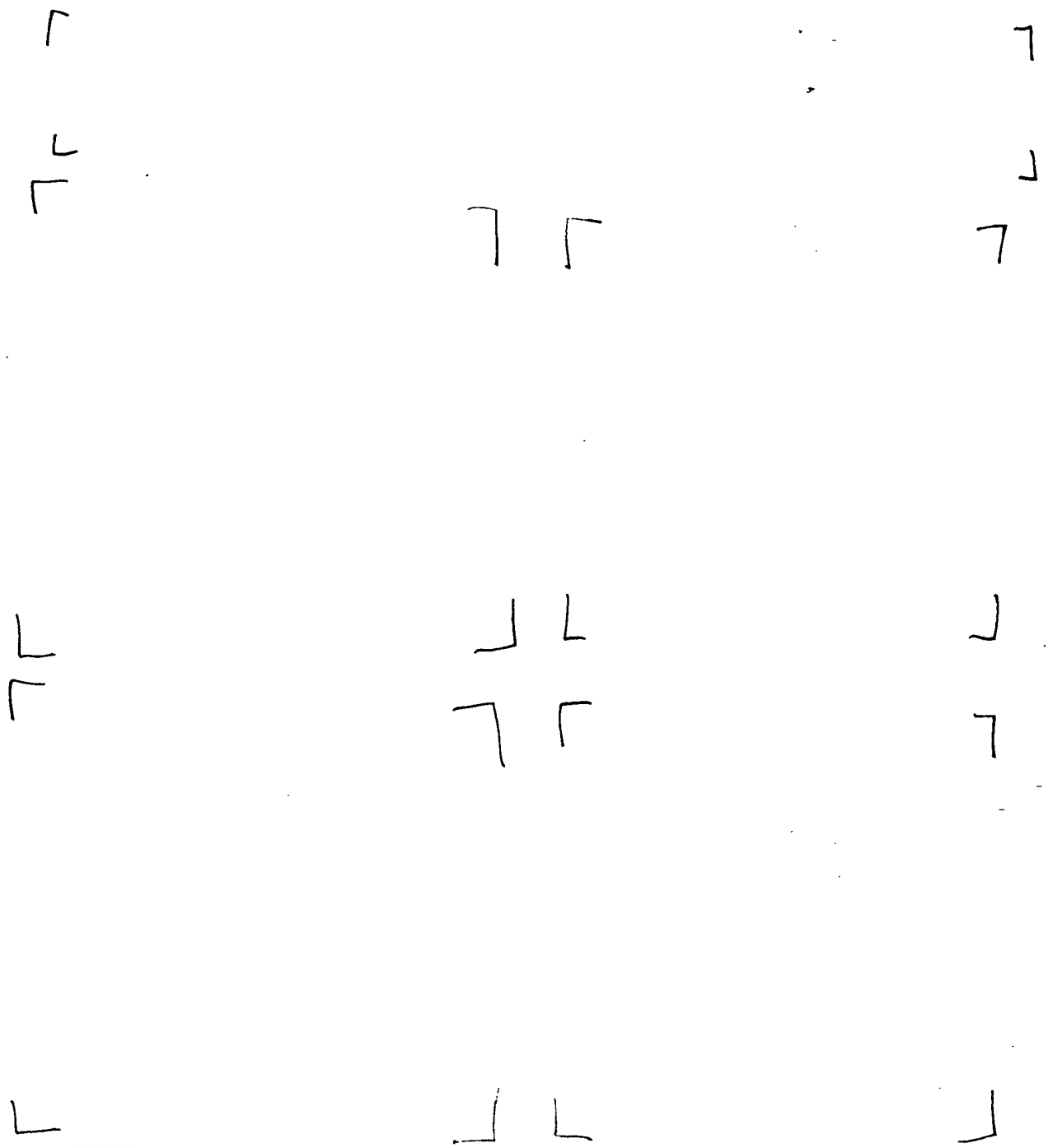
8. Chart 3 illustrates the countersilo capabilities of Soviet ICBMs, which make up that portion of the Soviet force best suited to a first strike against fast-reaction opposing forces. This consideration would be of particular importance to the Soviets' assessments of the capabilities of their intercontinental offensive forces, because their military doctrine stresses countermilitary targeting to contribute to damage-limiting objectives. The chart also illustrates the vulnerability of Soviet ICBM silos to a first strike by US ICBMs of programed types (that is, excluding M-X or a system with comparable hard-target capabilities). The Soviets' heavy dependence on silo-based ICBMs would make them especially mindful of the survivability of these weapons.

— The top two graphs show the increasing vulnerability of US Minuteman silos caused by Soviet deployment of accurate MIRVed ICBMs. For these calculations, we use a severe damage criterion, which we assume is the conceptual equivalent of what a prudent Soviet planner would use in evaluating his own capability.

— The top right-hand graph shows that if the Soviets elect to employ and can successfully execute two-on-one targeting tactics to compound the probability of destroying US silos, the number of Minuteman silos which would be expected to escape severe damage from a Soviet strike would be about 200 in 1980-81. This number would decrease to fewer than 100 in the mid-1980s and afterward.

— The bottom two graphs, on the other hand, show that the ongoing Soviet silo-hardening program largely offsets the improvements the United States has made and plans to make in the hard-target potential of its current types of ICBMs. Some 500 to 700 Soviet silos would survive attacks by currently programed types of US ICBMs during the period. The number of RVs in surviving Soviet silos, not shown on the chart, would in fact increase as the Soviets deploy more MIRVs.

— With respect to the graphs on Soviet silo survivability, it should be noted that our estimates of Soviet silo hardness are subject to considerable uncertainty. Further, we have no basis for estimating total system hardness, which is the criterion the Soviets would use. The continued testing of silo hardness, and a current program to modify even their newest silos and launch control centers, indicate that the Soviets are still seeking to improve their ICBM system survivability.



9. Charts 4 and 5 display trends in the destructive potential of intercontinental striking forces remaining after hypothetical counterforce attacks by the ICBMs of one side on the other. This is another simplified measure of some of the factors relevant to strategic capabilities, to perceptions about them, and to deterrence. (For a divergent view about the utility of this type of measure, see paragraph 13.) The calculations assume that the attacking side employs only ICBMs and strikes only at the retaliatory forces and bases of the other side. Clearly these are arbitrary limitations which neither side would likely follow in practice, although bombers and SLBMs are less useful than ICBMs for first-strike counterforce attacks against fast-reaction enemy forces. Using these assumptions, we make subtractions of two kinds from prelaunch potentials in order to show what we call residual forces.

— For the attacking side, residual forces are those ICBMs not used in the hypothetical counterforce attack plus all those SLBMs and bomber weapons that could be generated. Thus, for the attacker, the residuals are those forces available for other missions, either at the time of the first strike or later.

— For the side attacked, residual forces are those available for retaliation—that is, ICBMs calculated to survive hypothetical countersilo strikes plus bombers on alert and SLBMs at sea. The calculations assume that ICBMs ride out the attack without being launched from under attack, and assume that alerted bombers and at-sea SLBMs are not vulnerable to first strikes.

— Alternative first-strike conditions are examined: surprise attacks, in which the forces of the attacking side are in a generated posture but those of the side attacked are on day-to-day alert; and preemptive attacks, in which the forces of both sides are in a generated posture. The former is a worst case assumption for the side attacked. The latter corresponds conceptually to the conditions the Soviets believe most likely. Soviet military doctrine anticipates that intercontinental warfare would likely arise out of a crisis or theater conflict, although it does not rule out the possibility of surprise attacks.

10. Charts 4 and 5 show that Soviet residual potentials will tend to grow throughout the next 10 years, whereas those of the United States will remain fairly constant until about the mid-1980s and then increase. Noteworthy specifics are:

— In lethal area potential, shown in chart 4, the Soviet residual would far exceed that of the United States throughout the 1980s if the USSR struck first. The two sides would be about equal if the US struck first with surprise until about the mid-1980s, after

which the Soviet residuals would be the larger. The Soviet residual potential would exceed that of the United States if the United States struck first preemptively.

— In hard-target potential, shown in chart 5, fairly steady increases in Soviet residuals would improve the USSR's relative position considerably in the early 1980s, after which US advances would tend to parallel continued Soviet gains if the USSR struck first and would exceed the Soviet gains if the United States struck first. Except in the case of a Soviet surprise attack, US residual capabilities would be greater than those of the USSR in the middle and late 1980s.

— In absolute terms, however, the residual potentials of both sides are already substantial and will remain so. In all circumstances of attack, each side would have residual capabilities sufficient to inflict massive urban and industrial damage on the other. Even in the early 1980s, a Soviet surprise attack, though it would reduce the US potential by half, would leave the United States with residual lethal area potential greater than the total urban area of the USSR. Soviet residual lethal area potential would grow from more than half the total US urban area today to about [ ] It should be noted that this analysis uses a very stringent damage criterion—sufficient to destroy a reinforced concrete building.

— Finally, a comparison of the surprise and preemptive attack cases displayed in charts 4 and 5 shows—as would be expected—that both the relative and absolute residual potentials of the side attacked would be improved in the preemptive cases because in these cases we assume that its forces had been alerted prior to the attack. In residual hard-target potential, the improvement would be greater for the United States, largely because a greater proportion of its prelaunch potential is in bombers and ALCM carriers which can achieve enhanced survivability by higher alert rates.

11. Chart 6 illustrates the marked and growing asymmetries in the composition of Soviet and US intercontinental offensive forces, using residual potentials after hypothetical surprise attacks as the example.

— The left-hand graphs display the continuing heavy Soviet dependence on silo-based ICBMs. Soviet SLBM RVs, while increasing in numbers, add very little to residual lethal area and hard-target potentials because of their relatively low yields and poor accuracies. In this calculation, bombers make no contribution to Soviet residual potentials because the USSR keeps no bombers on alert—hence, we assume that none would survive a

US surprise attack. Because virtually all of the USSR's residual potential would be in ICBMs having short flight times, strikes against the United States by Soviet residual forces could arrive promptly.

— The right-hand graphs illustrate that the US force mix is more balanced at present, but that silo-based ICBMs would be reduced to only a negligible fraction of residual potentials in the future. The projected increases in the US residual potentials in the middle and late 1980s are caused by US deployment of Trident SSBNs and especially ALCMs.

— Increasing US dependence on aerodynamic vehicles (bombs, SRAMs, and ALCMs) is illustrated by their growth as a proportion of US residual potentials. With respect to hard-target potential, for example, in the case of a Soviet surprise counterforce attack in 1988, more than four-fifths of the US residual potential would be in aerodynamic vehicles having relatively slow flight times and subject to attrition by Soviet air defenses.

12. The results displayed in this Estimate are not to be taken as indicators of the results which might occur in war. Clearly, just the technique of allocating all residual forces against either hard or soft targets of nominal hardness before comparing them fundamentally divorces these analyses from the world of reality. Instead, the technique is intended only to display the general characteristics and qualities of the forces in comparable terms, and to illustrate trends in the two forces over the period of the next decade. Specifically, the calculations seek to:

— Compare gross capabilities against hard or soft targets in comparable situations in order to display whether one force or the other has more of an accent toward hard or soft target capability.

— Compare the relative capabilities of the two forces to absorb a first strike, by displaying how much retaliatory potential would survive on the side attacked (a factor which a side contemplating a first strike would have to consider along with its own remaining potential).

— Display the relative reliance of each weapons mix upon one type of weapon or another.

13. Last year, in NIE 11-3/8-77, a dissenting view was voiced with respect to the usefulness of such theoretical analyses. In part as a result of this difference of opinion, the Studies, Analysis, and Gaming Agency (SAGA) of the Joint Chiefs of Staff during this past year has conducted a simulation of a nuclear exchange between US and Soviet forces. This

simulation differs from the work in this Estimate in two cardinal respects:

— It seeks to be more realistic with respect to what might happen in wartime. The simulation attempts to take into account many more elements, such as a full range of economic and military targets on each side, the targeting doctrine of each side, and the possible attrition of bombers and cruise missiles by air defenses.

— It analyzes the results of a two-sided exchange in which the opposing forces seek to achieve specified levels of damage against a wide range of military and nonmilitary targets. The NIE looked only at the remaining and surviving forces after a first strike by only the ICBMs of one side against only the strategic nuclear striking forces of the other.

14. These different analytic approaches shed light on different aspects of the question of deterrence.

— The residual calculations in the NIE focus on the question of the capability of a side after its strategic forces had been attacked first. They shed light on the question of deterrence to the extent that the criterion is whether, after absorbing a first strike, a side would have enough destructive potential remaining to deter the other from attacking in the first place. Broadly speaking, this is the outlook of the doctrine of assured destruction as the principle of deterrence.

— The other form of analysis focuses on what the situation would be after a full-scale two-sided exchange. Broadly speaking, such analysis sheds light on ultimate war-fighting potential as the principle of deterrence.

15. The SAGA simulation has reached only preliminary conclusions thus far, and a number of the key assumptions are still being reviewed and tested for sensitivity. Thus, it is too early to draw opinions as to the nature of the balance of strategic forces from the SAGA effort. Next year, we hope, the results of both techniques will be available for comparison.

16. Over and above the question of whether the NIE and SAGA techniques lead to differing conclusions about the strategic balance, there remains a divergent view in the Intelligence Community about the propriety of the quasi-dynamic assessments of residual potentials contained in the NIE. The holders of this view believe that: (a) the analysis of relative US and Soviet strategic nuclear capabilities in wartime circumstances is not a proper function of the US Intelligence Community; and (b) such analysis is best done within the Department of Defense, with Intelligence as a full partner. The holders of this view

also believe that only the form of analysis that considers comprehensive two-sided exchanges can convey valid and useful impressions about relative US and Soviet strategic nuclear capabilities.[2]

17. The Director of Central Intelligence believes that both forms of analysis have their merits for the purpose of informing national decisionmakers about trends in the relative capabilities of forces. In his view:

— It is highly desirable to proceed with the SAGA simulation of wartime capabilities.

— The Intelligence Community welcomes an opportunity to participate as a partner in such an endeavor.

— Ultimately, what is needed is a net assessment effort under the direction of the National Security Council, with participation by the Department of Defense, the Department of State, the Intelligence Community, the Arms Control and Disarmament Agency, the prospective Federal Emergency Management Agency, and perhaps others.

Implications of Trends in Soviet Air Defense and ASW Capabilities

18. *Air Defense.* In light of the trends we anticipate in intercontinental offensive forces, the effectiveness of Soviet air defenses against aerodynamic penetrators will become even more important to US deterrent and striking capabilities in the 1980s than it is today. At present, the massive Soviet air defense forces would have good capabilities against aircraft at medium and high altitudes. There are, however, major technical deficiencies in their ability to intercept penetrators at low altitudes, and these are compounded by the low level of proficiency the air defense establishment has demonstrated to date. The Soviets are now working to develop improved systems for low-altitude defense. In the early 1980s, they will probably begin to field lookdown/shootdown fighters, an improved low-altitude SAM system, and an AWACS capable of detecting and tracking low-altitude targets at least over water.

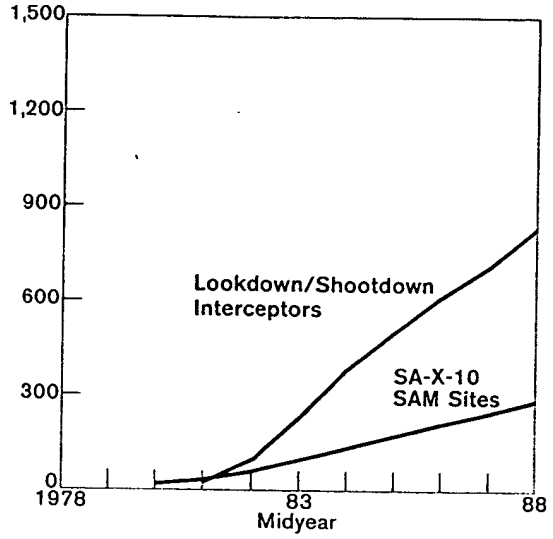
19. Chart 7 displays estimated trends in the Soviet potential to perform functions essential to low-altitude air defense over the next 10 years. It illustrates this potential for the region of the USSR west of the Urals, which contains much of the nation's population and economic and military assets, and in which the bulk of Soviet air defense forces are concentrated.

[2] *The holders of this view are the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of each of the military services. For an elaboration, including views and commentary on preliminary results of the SAGA study, see part E, paragraphs 198-201.*

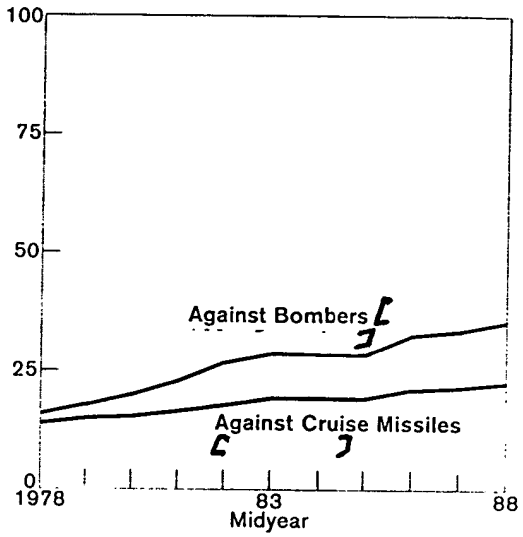
Trends in Soviet Low-Altitude Air Defense Potential in the Western USSR

Chart 7

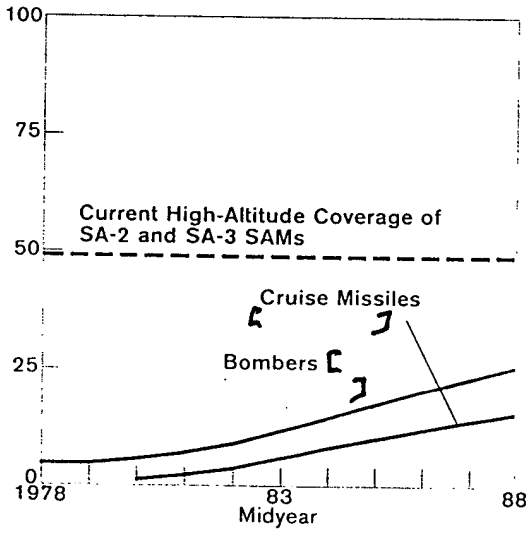
Number of New Low-Altitude Strategic Air Defense Weapon Systems



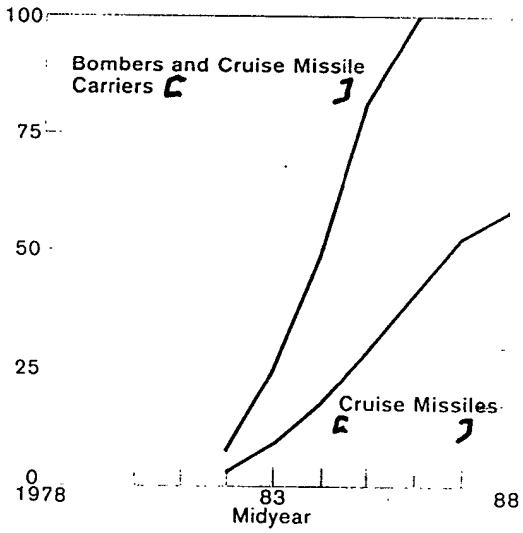
Potential for Vectoring Low-Altitude Interceptors (Percent of Area)



Potential Low-Altitude SAM Coverage (Percent of Area)



Potential AWACS Coverage of Overwater Approaches (Percent of Frontage Continuously Covered for up to 72 Hours)



For a divergent view regarding the utility of these charts. see paragraph 20.

~~Top Secret~~

— As illustrated in the top left-hand graph, beginning in the early 1980s, the numbers of improved Soviet weapon systems will probably grow fairly rapidly if, as we anticipate, the USSR places considerable emphasis on defenses against aerodynamic penetrators at low altitudes. By 1988, our best estimate projects the deployment in the western USSR of about 900 lookdown/shootdown fighters of several different types for area defense, and nearly 300 sites with low-altitude SA-X-10 SAMs having point defense capabilities.

— The top right-hand graph shows that, as Soviet lookdown/shootdown fighters increase in numbers in the middle and late 1980s, the improving Soviet air defense warning and control systems would have the technical potential to direct them to the vicinity of low-altitude bombers in an area growing from about 15 percent to about 35 percent of the western USSR. In the middle and late 1980s, the potential to vector fighters against cruise missiles at very low altitudes would exist in about 20 percent of this area. Much of the potential coverage is concentrated in the northwestern and Baltic approaches to Moscow and other major centers, and we expect this concentration to continue.

— The bottom left-hand graph shows the potential area in which improved SAM systems will have the technical potential to direct their missiles against low-altitude targets. The graph shows that the area of the western USSR afforded SAM coverage against low-altitude bombers is projected to grow from very little at present to about 25 percent in 1988, and against cruise missiles at very low altitudes from none at present to roughly 15 percent. These areas are much smaller than the roughly 45 percent of the western USSR now afforded coverage against high-altitude aircraft by point-defense SA-2 and SA-3 SAMs, but could include a number of high-value economic and military assets. It should be noted that the total area of future SAM coverage could be less than shown here, depending on the degree to which the Soviets deploy SAMs with overlapping coverage.

— The bottom right-hand graph illustrates our estimate of the offshore defense capabilities the Soviets would acquire by deploying an AWACS to cover overwater approaches in order to detect US bombers and ALCM carriers and direct interceptors to their vicinity. By the late 1980s, the Soviets will probably have the potential to maintain continuous forward defense coverage some 1,000 to 1,500 kilometers from Soviet borders along all overwater approach routes to the western USSR, for periods of up to about three days during a crisis or following

Soviet counterforce attacks against the United States. There would, however, be gaps in the potential coverage against cruise missiles once they were launched.

20. These graphs do not measure the probability that Soviet weapons would destroy penetrators, nor do they measure the overall effectiveness of the air defense system under operational conditions. We are unable to quantify the attrition which Soviet air defenses would be able to inflict on US low-altitude aircraft and cruise missiles, in large part because of uncertainties about key technical characteristics of future systems. Further, the actual attrition achieved would be influenced by other factors not measured or shown on the graphs, such as the manner and depth of defense deployments and the number of strategically important installations included in defended areas. Nor have we been able to quantify important operational factors and interactions [redacted] Accordingly, there is a divergent view in the Intelligence Community which holds that graphs showing the gross area of theoretical coverage of air defense systems, particularly when standing alone, can be misleading as indicators of trends in Soviet air defense potential. Because such graphs cannot incorporate the more important deployment and operational considerations noted above, this view concludes that the graphs are not useful.[3]

21. The estimates that follow represent our best judgments about the nominal capabilities of Soviet air defenses against the several elements of the programed US aerodynamic force, without taking operational factors into account.

— In general, we estimate that at least through the early 1980s, improved Soviet air defense systems will not be available in numbers large enough to markedly improve defense against bombers and cruise missiles at low altitudes.

— In the middle and late 1980s, Soviet air defenses will probably have reduced the USSR's vulnerability to US defense avoidance tactics. Undegraded, the defenses would have the nominal potential to inflict considerably higher attrition against an attack by US bombers of current types. We believe that these defenses, however, will probably have little or no effective capability against SRAMs carried by bombers.

— It is especially difficult to estimate the likely capabilities of Soviet air defenses against cruise missiles in the middle and late 1980s. We believe that in the mid-1980s the USSR could have a

[3] *The holders of this view are the Senior Intelligence Officers of each of the military services.*

gradually increasing nominal capability to defend some key areas against currently programed US cruise missiles. Nevertheless, throughout the next decade, because of technical and numerical deficiencies, the USSR's nominal capability to defend against a large force of US cruise missiles will probably remain low.

— While we cannot quantify the effects of [ ] it is likely that these factors would weigh heavily against the overall effectiveness of Soviet air defenses. Thus we believe that the actual performance of the defenses against combined attacks involving large numbers of US bombers, SRAMs, and cruise missiles will remain low during the period of this Estimate.

22. *Antisubmarine Warfare.* Soviet forces with ASW capabilities are not now an effective counter to US SSBNs. The USSR is attempting, however, to overcome its deficiencies in ASW. Major R&D programs include the development of improved sensors for submarine detection. The number of nuclear-powered attack submarines having ASW capabilities which are relatively good by Soviet standards will probably increase from about 25 at present to 75 or more in the late 1980s, or as many as 100 if a number of Y-class SSBNs are converted to SSNs. There is tentative evidence suggesting a trend toward quieter SSNs. New types of surface ships and long-range patrol aircraft with somewhat improved capabilities for ASW are likely. The critical problems confronting the USSR in ASW, however, are limitations in sensors and data processing.

— Foreseeable improvements will likely give the USSR better technical capabilities to detect, track, and attack SSBNs that are operating near the USSR, are in confined waters, or are transiting choke points such as straits.

— Judging by what we know of Soviet R&D programs and our understanding of ASW research in the United States, we believe the Soviets have little prospect over the next 10 years of developing systems capable of detecting and covertly tracking US submarines in broad ocean areas.

— With larger numbers of ASW-capable forces and improved ASW sensors, the Soviets would have somewhat better capabilities for overt tracking of US submarines as they leave port or transit through choke points. Considering the likely limitations in Soviet forces, the countermeasures available to US forces, and the general complexity of the problem, we do not believe that, during the next 10 years, the Soviets will be able to conduct sustained overt tracking of US SSBNs on patrol.

— In the 1980s, moreover, longer range SLBMs will triple the ocean area within which US SSBNs will be able to operate and remain within missile range of targets in the USSR.

— We therefore believe that, throughout the period of this Estimate, virtually all US SSBNs on patrol would be able to launch their missiles.

Major Factors Influencing Future Soviet Policy

23. As the Soviets now view their strategic position, they probably consider their strategic capabilities to be the equal of those of the United States and superior to those of their other adversaries. They almost certainly have increased confidence that these forces effectively buttress the USSR's superpower position, and that they contribute to the Soviet aim of shifting the total world correlation of forces in the USSR's favor. The Soviet leaders do not want nuclear war—they believe it would be a disaster. In our judgment, however, their ideology and their political and military objectives combine to motivate them to compete with the United States in the global arena and to try to isolate it from its allies. From their perspective, powerful strategic capabilities offer foreign policy advantages, and superior capabilities to fight and survive a nuclear war constitute the best deterrent as well as the best preparation for the contingency of nuclear war should it occur.

24. The Soviets are approaching the end of an ICBM/SLBM deployment cycle and the beginning of a new Five-Year Plan. In the relatively near term, they face mounting economic problems and leadership transition. They are aware that the United States and NATO are considering several important military program options which are as yet undecided. The Soviets want to conclude a SALT II agreement limiting some aspects of the arms competition, for reasons which we believe include increasing their prestige as a superpower equal to the United States and reducing the prospects of increased US defense efforts.

25. Thus the Soviets could be reaching a major decision point, at which they might contemplate reductions in the growth of resources committed to strategic programs as part of an effort to reduce the defense burden they carry. Total military expenditures, which absorb an estimated 11 to 13 percent of the Soviet gross national product, will come under close scrutiny because the USSR's economic growth rate is expected to decline in the 1980s because of manpower, energy, and productivity problems.[4] Procurement and operation of strategic forces account for roughly one-fifth of total defense spending. Strategic

[4] See NFAC Intelligence Assessment SR 78-10136, *Estimated Soviet Defense Spending: Trends and Prospects*, August 1978.

programs also absorb a large but unknown portion of the additional one-fourth of total defense spending which is allocated to R&D.

26. As the Soviets evaluate possible ways of reducing the burden of defense programs, they would seek alternatives which offered significant returns to the economy without jeopardizing their military posture. Prospective SALT II limitations on strategic offensive forces would not by themselves significantly affect defense spending. The resources devoted to development, production, and deployment of these forces, moreover, tend to be highly specialized and not readily transferable to such critical civilian programs as energy. Reduction in strategic force manpower would be of marginal value because these forces are less manpower intensive than other elements of the armed forces. In addition, the Soviets already have committed large capital resources for strategic programs which will extend into the 1980s. The Soviets probably view some of these commitments as consolidating and reinforcing recent strategic gains, and some as offering the prospect of overcoming current deficiencies. In sum, we believe that even if overall military spending were to be curbed, strategic programs would suffer least.

27. A number of countervailing factors lead us to conclude that, despite economic difficulties, the Soviets will continue their long-term strategic force improvement programs. Chief among them are the following:

— In the Soviet view, even better strategic capabilities would enhance deterrence still further and foster strategic stability through Soviet advantage. The Soviets almost certainly make generous assumptions about potential US and NATO capabilities, and are also concerned about China and its prospective modernization. They can anticipate that in the mid-1980s and after, US programs now in the planning stages could erode the USSR's earlier gains.

— The Soviets almost certainly do not have full confidence in the countersilo capabilities they will possess in the early 1980s, in part because success would depend on execution of complex and inherently uncertain targeting tactics. We believe they will seek to develop and deploy new or modified ICBMs with accuracies sufficient to permit them to employ simplified targeting tactics to attack US ICBM silos, thereby increasing Soviet confidence in the probability of successful attack. We also believe they will concentrate heavily on attempts to overcome the USSR's weaknesses in low-altitude air defense and in ASW capabilities against SSBNs, and will continue R&D on improved ABM systems.

— Momentum is imparted to Soviet strategic programs by the USSR's large, permanent military R&D establishments, the military services, and the military industries. In R&D especially, the Soviets will strive to match or surpass the United States in selected advanced technologies having strategic application, and at a minimum to avoid falling behind technologically.

— The possibility, however remote, that intercontinental nuclear war might actually occur will continue to support Soviet efforts to improve the USSR's strategic posture. The Soviets still express concerns about the US capability to conduct a surprise intercontinental attack, even though they believe the likelihood of such an attack is low for the foreseeable future. They are evidently also doubtful about whether escalation to intercontinental warfare can be avoided once the nuclear threshold has been crossed in theater warfare. In evaluating their chances of surviving a nuclear war, the Soviets are likely to remain uncertain about the degree to which their active and passive measures would protect their economy and population, and about their ability to conduct sustained military operations.

— In general, in their planning for the future, the Soviets are likely to be seeking ways to increase the options available to the leadership in crisis or conflict, to control nuclear escalation in the event of a NATO–Warsaw Pact theater conflict, and to improve the endurance of the nation and its forces so that in the unlikely event of intercontinental war the USSR could emerge in a better position than that of its adversaries.

Other Considerations

28. *Effects of SALT II Limitations.* We have examined the effects of a prospective SALT II agreement on Soviet intercontinental offensive forces. As the preceding analysis shows, we expect Soviet strategic capabilities to improve steadily under SALT II limitations.

— In the forces we have projected under SALT II, Soviet delivery vehicles of types limited by the agreement are some 15 to 30 percent fewer than we would expect in the middle and late 1980s in the absence of such limitations. Total online weapons projected for Soviet intercontinental forces are several thousand fewer, but SALT limitations would not prevent the USSR from matching or surpassing the United States in this index, at least for a few years in the early 1980s.

— SALT II limitations would not reduce the threat to US ICBM silos and other intercontinental forces and bases. However, both prelaunch and residual Soviet lethal area and hard-target

potentials are somewhat less in our SALT II projection than we believe they would be if Soviet programs were unconstrained.

— SALT II limitations would not prevent the development and deployment of a broad spectrum of improved weapons, but it would foreclose some Soviet options—such as deploying follow-on systems as add-ons rather than replacements, building more than one wholly new ICBM, and taking full advantage of the USSR's large ICBM throw weight by pressing fractionation still further.

— One effect of SALT II would be to reduce some US uncertainties about the future size and composition of those Soviet forces which were limited, though many critical uncertainties are independent of SALT.

29. *Likely Soviet Hedges.* Some Soviet developmental activities probably represent hedges against possible future US threats, deterrents to US withdrawal from arms control agreements, and efforts to give the Soviet leaders options—including options to break out of arms control agreements themselves—which could be exercised if they came to judge that the situation warranted it. These include:

— An R&D program in antiballistic missiles could give the Soviets the option to deploy widespread ABM defenses, but probably not before the early 1980s or later. The ABM system now under development could probably be deployed at some 25 urban target areas some five years after a decision to begin such deployment, or in as little as a year if the Soviets stockpiled components and trained troops covertly for several years beforehand. [ ] We have no reason to believe, however, that the USSR would abrogate the ABM Treaty in circumstances approximating those of the present US-Soviet political and strategic relationship.

— A mobile ICBM program could give the Soviets the option to deploy ICBMs with better survivability should their fixed silos be threatened. A mobile ICBM system has been developed. Its production and deployment are evidently now in abeyance, but R&D on a modified or follow-on missile continues.

— A long-range air-launched cruise missile program may represent another hedge against potential vulnerability of Soviet ICBM silos or an attempt to demonstrate the USSR's capability to compete with the United States in systems of this type. We assume that the Soviets will deploy at least some such missiles under SALT II, on existing aircraft beginning in the early 1980s or on an aircraft specifically designed to carry them somewhat

later. A small cruise missile similar in size and capability to the US Tomahawk could probably be ready for flight-testing in the mid-1980s.

30. *Soviet Civil Defense Program.* We have acquired no new evidence during the past year that alters any of our principal conclusions about the scope, objectives, pace, and effectiveness of the Soviet civil defense program. Soviet civil defenses remain capable of protecting most leaders, a crisis work force, and some of the urban population in blast-resistant shelters. The critical decision for protecting most urban dwellers, however, is and will remain whether to order evacuation in a crisis. With no evacuation, prompt casualties could be on the order of 100 million, whereas with about a week for urban evacuation and other preparations, prompt casualties could probably be reduced to the low tens of millions. The civil defense program is not capable of preventing the destruction of much of the USSR's industrial capacity and its most valued material accomplishments, and it is not proceeding in a way which seems likely to achieve a significant reduction in the vulnerability of the Soviet economy.

31. The Soviet leaders view their civil defense program as integral to the USSR's military strategy and strategic posture. They almost certainly believe their present civil defenses would improve their ability to conduct military operations and would enhance the USSR's chances of surviving a nuclear war. Given the many uncertainties attendant to a nuclear exchange, however, they cannot have confidence in the degree of protection that would actually be afforded. We do not believe that their present civil defenses would embolden Soviet leaders deliberately to expose the USSR to a higher risk of nuclear war. We have no firm basis for judging the degree to which civil defense preparations will affect Soviet perceptions of the future strategic balance.

32. There is a divergent view in the Intelligence Community which holds that the USSR's civil defenses, in conjunction with its other strategic capabilities, provide the Soviet leadership with a significant advantage in the event of a nuclear war. In this view, the Soviet civil defense program—through its potential for influencing political perceptions, providing leverage for coercion during a crisis, affecting nuclear exchange outcomes, and contributing to postwar recovery—impacts on the reality of the strategic balance and on perceptions of the balance in the USSR and elsewhere.[5]

33. [ ] The foregoing evaluations assume SALT II conditions and adherence to the ABM Treaty. They reflect our best estimates of likely Soviet programs. The results, however, are sensitive to a number of uncertainties about the size,

[5] *The holders of this view are the Director, Defense Intelligence Agency, and the Senior Intelligence Officers of each of the military services.*

structure, and capabilities of Soviet forces and their supporting elements. In addition,[

]

— Soviet concealment programs are becoming more sophisticated, centrally directed, and better enforced.[

]

— In the area of Soviet weapon characteristics, Soviet security measures in many cases prevent us from learning enough about the prospective capabilities of systems in R&D to determine the threat until after the systems have reached the flight-test stage or its equivalent. Uncertainty sometimes persists even after a system is deployed.[

]These factors, along with the breadth of Soviet military R&D, lead to the danger of delay in determining the performance of improved Soviet strategic systems and imprecise or belated identification of advanced or novel systems. With respect to ASW R&D,[

]we believe we can learn enough about Soviet progress to identify major new developments before they reach operational deployment.

— The military capabilities of US and Soviet strategic forces are highly dependent on their prospective performance under actual operational conditions. US intelligence, however, confronts serious gaps in information and analysis about Soviet force performance, and cannot by itself judge the net effects of interaction between the forces of the United States and the USSR in the event of crisis or conflict.